

REMARKS

In response to the Final Office Action:

[1-2] Claims 1 and 4-8 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite. These claims are amended in view of the Examiner's remarks and the discussion during the personal interview of September 10, 2003, and now describe the angles as "adjacent." Adjacent angles are defined as "two angles having the same vertex and having a common side between them" (Random House dictionary). The Applicants' remarks of September 24 are referred to. Withdrawal of the rejection is requested.

[3-4] Claims 1-3¹ were rejected under 35 U.S.C. §103 as being unpatentable over Kan (U.S. Patent 4,557,582) in view of JP 2-222110. This rejection is respectfully traversed.

The Applicants' remarks of April 22, 2003, are repeated below:

"Convergence. The Applicants explain at page 18, line 9 to page 19, line 2, "First magnetic piece 42 is subjected to orientation magnetization that converges as shown by arrow 44 ... fourth magnetic piece 48 is subjected to orientation magnetization that converges as shown by arrow 49 ... according to this second embodiment, by making the orientation magnetization directions 44 and 49 of the adjacent magnetic pieces 42 and 48 converge towards the outside (apex 43) of the joining face 45 (joining face of N pole side gluing face 42a and N pole side gluing face 48a), a repulsive magnetic field can be generated in most efficient manner."

"The Examiner is invited to consider that the non-uniform, converging magnetization shown by the converging arrows 44 and 49 in Fig. 3 will increase the magnetic field at the apex 43.²

¹ Claims 2-3 are canceled.

² Each small volume of magnetic material contributes to the magnetic field at the apex 43, which is the sum of all the field components.. Since all of the field components at the apex point directly toward their respective small volumes, the sum is maximized. When the magnetization is aligned and parallel as in Kan, the field from each small volume points at an angle and the vector sum is decreased.

“Kan. Kan discloses a magnet roller in Fig. 8A, wherein four pieces are provided at the outer periphery of a shaft 9, respective joining faces coincide with roller radial directions, and adjacent orientation magnetization directions are set towards the joining faces. Thereby, peaks of magnetic poles are generated on the extension lines of the joining faces. But Kan never discloses that the orientation magnetization directions *converge* towards the outside of the joining faces. Kan discloses *parallel* orientation magnetization directions of respective magnet pieces, set at substantially 45° to the joining faces, and this angle is the same throughout every portion of the magnet pieces. As the lines of magnetism are perpendicular, there is no “converging the directions of orientation magnetization towards an outside of the magnet roller,” as claimed.

“JP 2-222110. JP 2-222110 discloses that magnetic pieces 9 are fixed to a body 8 comprising ferrite magnetic material, and that the magnetic pieces are made from “isotropic” R-Fe-B magnetic powder and binder. The magnet piece 9 is held in a groove or recess 9a (Fig. 9; see also Fig. 10). This reference nowhere discloses that the orientation magnetization directions are made to converge; there appears to be only a single orientation magnetization direction. As the material is “isotropic,” there is no variation as one moves through the material in any direction. That does not describe a material with converging directions of orientation magnetization, because a property (the magnetization direction) changes through the material.

“Claim 1. Contrary to the applied references, claim 1 (exemplified by instant Fig. 3) recites that the orientation magnetization directions “converge towards the outside of the magnet roller.” Accordingly, the present invention is completely different from the structure disclosed by Kan. Table I in the Applicants' specification (p. 20) shows that when the orientation magnetization directions converge toward the outside of the joining faces, the highest magnetic flux density (970 G) is achieved.

“New claim 8, supported at page 18 and Fig. 3, is furthermore patentable for the additional feature of the magnetization converging to the outer apex.

“Neither of the applied references discloses convergence, and therefore no combination would reach the Applicants' subject matter even if they were combined. The Applicants respectfully believe that combination is not obvious, because Kan uses magnets in contact and JP '110 uses separates isolated magnets.”

The Applicants' remarks of September 24, 2003, are repeated below:

“Regarding the term “converging” in claim 1, the Examiner stated at the interview that this term might cover not only the magnetization shown in the upper half of the Applicants' Fig. 3, but also the magnetization shown in the upper half of the Applicants' Fig. 4 (or, in Fig. 8A of the Kan reference).

“The word “converge” appears in the Detailed Description of the instant specification on page 18 (lines 10, 15, and 24), and that text describes Fig. 3, but *not* Fig. 4. The only exception is that “converge” also appears in the final two summarizing paragraphs of the Detailed Description (page 27, line 25 and page 28, line 2).³

“The text on page 18, lines 6-10, reads, “As shown in Fig. 3, [first magnetic piece 42 is subjected to orientation magnetization that *converges* as shown by arrow 44 second magnetic piece 48 is subjected to orientation magnetization that *converges* as shown by arrow 49” (italics added). The magnet pieces in Fig. 4, that correspond to magnet pieces 42 and 48 in Fig. 3, are labeled as 52 and 51; the quoted passage does not refer to Fig. 4. The discussion of Fig. 4 starts on the next page, at line 3.

“The Examiner is now asked to consider that, because “converge” is used in the specification to describe only Fig. 3 and not Fig. 4, it follows that “converging” in the claims is *defined* by the Applicants' specification to exclude the subject matter of Fig. 4 (and any similar prior art).

³The undersigned attorney determined this by a word search of a computer file of the application.

"MPEP §2173.05 refers to "the well-established axiom in patent law that a patentee or applicant is free to be his or her own lexicographer when there is more than one definition of a term, [the applicant should] make clear which definition is being relied upon to claim the invention."

"The Examiner stated at the interview that "converging" might be interpreted in two ways, to cover Fig. 3 or Fig. 4. Assuming that is correct, the Applicants have made it perfectly clear which of the two definitions should be applied to the claims, by using the claim term to refer only to Fig. 3 and not to Fig. 4 which is similar except for relative orientations of the arrows 44.

"Thus, "converging" in claim 1 covers the subject matter illustrated in Fig. 3, and not that illustrated in Fig. 4. Therefore Fig. 8A of Kan does not show converging magnetization, and neither does any of the other applied art."

Withdrawal of the rejection, favorable consideration and allowance are respectfully solicited.

Respectfully submitted,

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